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| 09/780,402      | 02/12/2001  | Junichi Yamanouchi   | 003510-076          | 8498             |

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BURNS DOANE SWECKER & MATHIS L L P  
POST OFFICE BOX 1404  
ALEXANDRIA, VA 22313-1404

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| EXAMINER |
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SHOSHO, CALLIE E

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| ART UNIT | PAPER NUMBER |
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1714

DATE MAILED: 03/06/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant N .

09/780,402

Applicant(s)

YAMANOUCHI ET AL.

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

**Claim Rejections - 35 USC § 112**

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claims 1, 15, and 18 each recite in the last line of each claim that “(v) one or more carboxyl groups are present in the molecule”. There is insufficient antecedent basis for the limitation “the molecule” in the claim. Further, the scope of the claim is confusing because it is not clear what is meant by “molecule”. Does this refer to the dye?

Similarly, claims 2, 16, and 19 each recite in the fourth last line of each claim that “two or more substituent groups represented by  $\text{NR}^{271}\text{SO}_2\text{R}^{272}$  are contained in the molecule. The scope of the claim is confusing because it is not clear what is meant by molecule. Does this refer to the entire dye or a specific portion of the dye? Clarification is requested.

(b) Claim 12 recites that the coloring particulates are obtained “by one of adding water to the organic solvent and adding the organic solvent into water”. The scope of the claim is confusing because it recites alternative language “by one of” and also recites “adding water to the organic solvent” and “adding the organic solvent into water”. If the coloring particulates are

in fact prepared “by one of” the methods, it is suggested that the above phrase is re-written as “by either adding water in the organic solvent or adding the organic solvent into water”.

**Claim Rejections - 35 USC § 102**

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1, 3-6, 8, 10-11, 13-15, 7-18, and 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Helling et al. (U.S. 6,313,196).

Helling et al. disclose a water-based ink jet ink and method of ink jet printing wherein the ink comprises coloring particles comprising polymer including polyurethane, polyamide, polycarbonate, polyester, and polyurea which are ionically modified with 0.04-1.8 meq/g ionic group including carboxyl group and sulfonate group and oil-soluble dye of the formula which is identical to the dye presently claimed when A is  $\text{NR}^4\text{R}^5$  and  $\text{R}^4$  is alkyl and  $\text{R}^5$  is alkyl group or alkyl group substituted with  $\text{NRSO}_2\text{R}$ ,  $\text{R}^2$  is alkyl,  $\text{R}^3$  is hydrogen,  $\text{B}^1$  is  $=\text{CR}^6$ ,  $\text{B}^2$  is  $\text{CR}^7$ ,  $\text{R}^6$  and  $\text{R}^7$  are each hydrogen,  $\text{R}^1$  is alkyl, and X and Y are independently  $-\text{C}(\text{R}^8)=$  or  $-\text{N}=$  where  $\text{R}^8$  is alkyl or aromatic group having two substituents. There is also disclosed a method of ink jet printing wherein the above ink is used in an ink jet printer (col.1, lines 53-54 and 63-67, col.2,

lines 29-30, col.7, lines 30-34, col.15/16 - dyes M3-M7, col.17/18 – dye M-9, and col.20, lines 13-16).

Although there is no explicit disclosure in Helling et al. of the wavelength of maximum absorption or absorbance at different wavelengths as presently claimed, given that Helling et al. disclose dye identical to that presently claimed, i.e. dye which has identical chemical structure, it is clear that the ink of Helling et al. would inherently produce an ink composition with wavelength of maximum absorption or absorbance as presently claimed.

In light of the above, it is clear that Helling et al. anticipate the present claims.

**Claim Rejections - 35 USC § 103**

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

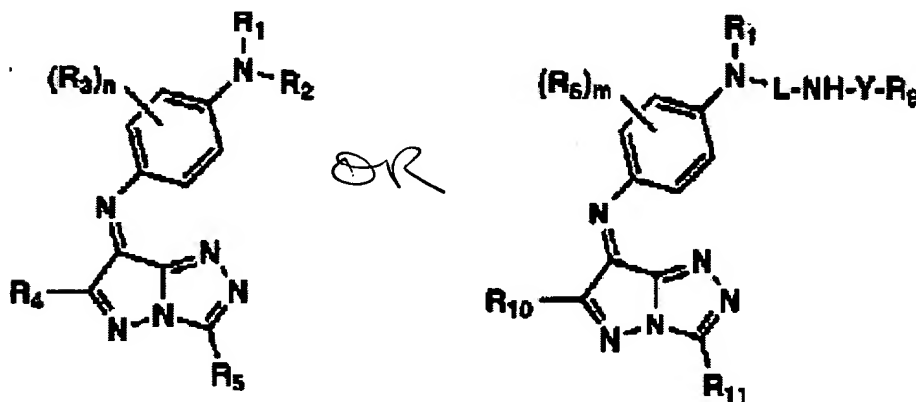
7. Claims 1-3, 5-6, and 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) or Tsutsumi et al. (U.S. 6,031,019) either of which in view of JP 09059522.

Sacripante et al. disclose an aqueous ink jet ink and method of ink jet printing wherein the ink comprises colored particles dispersed in a liquid medium and wherein the colored particles comprises oil-soluble polymer including polyamide and polyester comprising 2.5-15 mol% ionic group such as carboxyl and sulfonate group and oil-soluble dye. There is also disclosed a method of making the colored particles wherein the polymer, dye, and solvent are added to water and then emulsified. There is further disclosed an ink jet printing method wherein the above described ink is added to ink jet printer (col.3, lines 25-32, col.3, line 64-col.4, line 2, col.4, lines 5-8, 14-17, and 36-51, col.5, lines 8-11, col.6, line 53, col.9, lines 18-24 and 37-38, col.11, lines 21-23, and col.12, lines 7-12). From example 1, it is calculated that the polymer comprises approximately 0.35 mmol/g ionic group  $((\text{amount ionic group})/((\text{amount polymer})(\text{MW ionic group}))) \times 1000$  or  $(30/(354)(239)) \times 1000$ .

Alternatively, Tsutsumi et al. disclose a water-based ink jet ink and method of ink jet printing wherein the ink comprises polymer particles colored with oil-soluble dye wherein the polymers include polyurethane and polyester comprising 1-25% ionic groups including carboxyl and sulfonic groups. There is also disclosed a method of making the colored particles wherein the polymer, dye, and solvent are added to water and then emulsified. There is further disclosed an ink jet printing method wherein the above described ink is added to ink jet printer (col.1, lines 14-24, col.3, line 65-col.4, line 17, col.4, lines 21 and 49-51, col.6, lines 54-56, col.8, lines 11-12, col.11, lines 56-60, and col.12, lines 61-67). From example 1-2, it is calculated that the polymer comprises approximately 1.75 mmol/g ionic group  $((\text{amount ionic group}) / ((\text{amount polymer})(\text{MW ionic group})) \times 1000 \text{ or } (15/(100)(86)) \times 1000)$ .

The difference between either Sacripante et al. or Tsutsumi et al. and the present claimed invention is the requirement in the claims of specific type of oil-soluble dye.

Pending translation, it is noted that JP 09059552, which is drawn to ink jet ink, disclose the use of oil-soluble dyes of the formula:



wherein  $R_1$  and  $R_2$ , corresponding to presently claimed  $R^4$  and  $R^5$ , are hydrogen, aliphatic, aromatic, or heterocyclic group,  $L$  is alkylene group,  $Y$  is carbonyl or sulfonyl group,  $R_9$  is aromatic, aliphatic, heterocyclic, alkoxy, or amino group,  $R_3$  or  $R_6$ , which each correspond to either presently claimed  $R^2$ ,  $R^3$ ,  $R^6$ , and  $R^7$  are halogen, alkoxy, aryl, carboxyl, or amino group,  $R_4$  or  $R_{10}$ , which each correspond to presently claimed  $R^1$ , are aliphatic, aromatic, heterocyclic, alkoxy, sulfonyl, or amino group, presently claimed  $X$  is  $-CR_5=$  or  $-CR_{11}=$ , which each correspond to presently claimed  $-C(R^8)=$ , where  $R_5$  or  $R_{11}$  is hydrogen, aliphatic, or aromatic group, presently claimed  $Y$  is  $-N=$ , and presently claimed  $B^1$  is  $=C(R^6)-$  and  $B^2$  is  $-C(R^7)=$  wherein  $R^6$  and  $R^7$  are defined above (abstract, claim 1, and paragraphs 50-56).

Further, with respect to limitation (i) in present claims 1, 15, and 18, it is noted that  $R_1$  and  $R_2$  also include substituted alkyls such as alkyl substituted with OH group and  $L-NH-Y-R_9$  includes alkyl substituted with  $NHCOCH_3$  group (see dye 1-14, paragraph 51 and dye 3-15, paragraph 56), with respect to limitation (iii) in the same claims, it is noted that  $R_5$  includes aryl with two substituents (see dye 2-13 in paragraph 54), while with respect to limitation (v) in the same claims, it is noted that dye 1-16 in paragraph 51 contains a water-soluble group. Further, it is noted that dye 3-15 of JP 09059552 is identical to presently claimed formula 2-1 (present claims 2, 16, and 19) when  $R^{201}$  and  $R^{202}$  are each alkyl group substituted with  $NHCOCH_3$  group.

The motivation for using such dye in the ink composition is that the dye produces a printed image that has excellent color tone, reproducibility, and resistance to light (abstract).

Although there is no explicit disclosure in JP 09059522 of the wavelength of maximum absorption or absorbance at different wavelengths as presently claimed, given that JP 09059522



disclose dye identical to that presently claimed, i.e. dye which has identical chemical structure, it is clear that the use of the dye disclosed by JP 09059522 in the ink of either Sacripante et al. or Tsutsumi et al. would intrinsically produce an ink composition with wavelength of maximum absorption or absorbance as presently claimed.

In light of the motivation for using specific dye disclosed by JP 09059552 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink jet ink of either Sacripante et al. or Tsutsumi et al. in order to produce an ink which produces a printed image that has excellent color tone, reproducibility, and resistance to light, and thereby arrive at the claimed invention.

8. Claims 1-20 rejected under 35 U.S.C. 103(a) as being unpatentable over Sacripante et al. (U.S. 6,025,412) or Tsutsumi et al. (U.S. 6,031,019) either of which in view of JP 03231975.

Sacripante et al. disclose an aqueous ink jet ink and method of ink jet printing wherein the ink comprises colored particles dispersed in a liquid medium and wherein the colored particles comprises oil-soluble polymer including polyamide and polyester comprising 2.5-15 mol% ionic group such as carboxyl and sulfonate group and oil-soluble dye. There is also disclosed a method of making the colored particles wherein the polymer, dye, and solvent are added to water and then emulsified. There is further disclosed an ink jet printing method wherein the above described ink is added to ink jet printer (col.3, lines 25-32, col.3, line 64-col.4, line 2, col.4, lines 5-8, 14-17, and 36-51, col.5, lines 8-11, col.6, line 53, col.9, lines 18-24 and 37-38, col.11, lines 21-23, and col.12, lines 7-12). From example 1, it is calculated that the polymer

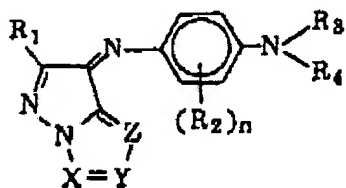
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comprises approximately 0.35 mmol/g ionic group  $((\text{amount ionic group}) / ((\text{amount polymer})(\text{MW ionic group}))) \times 1000$  or  $(30 / (354)(239)) \times 1000$ .

Alternatively, Tsutsumi et al. disclose a water-based ink jet ink and method of ink jet printing wherein the ink comprises polymer particles colored with oil-soluble dye wherein the polymers include polyurethane and polyester comprising 1-25% ionic groups including carboxyl and sulfonic groups. There is also disclosed a method of making the colored particles wherein the polymer, dye, and solvent are added to water and then emulsified. There is further disclosed an ink jet printing method wherein the above described ink is added to ink jet printer (col.3, line 65-col.4, line 17, col.4, lines 21 and 49-51, col.6, lines 54-56, col.8, lines 11-12, col.11, lines 56-60, and col.12, lines 61-67). From example 1-2, it is calculated that the polymer comprises approximately 1.75 mmol/g ionic group  $((\text{amount ionic group}) / ((\text{amount polymer})(\text{MW ionic group}))) \times 1000$  or  $(15 / (100)(86)) \times 1000$ .

The difference between either Sacripante et al. or Tsutsumi et al. and the present claimed invention is the requirement in the claims of specific type of oil-soluble dye.

Pending translation, it is noted that JP 03231975, which is drawn to ink jet ink, discloses an oil-soluble dye of the formula:



wherein  $R_3$  and  $R_4$ , which correspond to presently claimed  $R^4$  and  $R^5$ , are each alkyl, cycloalkyl, aralkyl, or aryl group,  $R_2$ , which corresponds to presently claimed  $R^2$ ,  $R^3$ ,  $R^6$ , and  $R^7$  are each hydrogen, cyano, alkyl, alkoxy, aryl, amino, or halogen,  $R_1$ , which corresponds to presently claimed  $R^1$ , is hydrogen, cyano, alkyl, alkoxy, aryl, amino, or halogen, presently claimed X and Y are independently either  $-CR_5=$  or  $-N=$ , where  $R_5$  is hydrogen or alkyl, aryl, or heterocyclic group, and presently claimed  $B^1$  is  $=C(R^6)-$  and  $B^2$  is  $-C(R^7)=$  wherein  $R^6$  and  $R^7$  are defined above (abstract, examples in col.22-39).

Further with respect to limitation (i) in claims 1, 15, and 18, it is noted that  $R_3$  and  $R_4$  also include substituted alkyls such as alkyl substituted with cyano group and alkyl substituted with OR group (see formula (26), page 807), with respect to limitation (iii) in the same claims, it is noted that  $R_5$  includes aryl with two substituents (see formulas (16), (23), and (27) on pages 806-807), while with respect to limitation (iv) in the same claims, it is noted that the dye of formula (27) includes two or more substituent groups represented by  $NHSO_2R$  where R is alkyl group and aromatic group, respectively. Further, it is noted that dye of formula (26) of JP 03231975 is identical to presently claimed formula 2-1 (present claims 2, 16, and 19) when  $R^{201}$  and  $R^{202}$  are alkyl group substituted with cyano group and OH group, respectively, while the dye of formula (27) of JP 03231975 is identical to presently claimed formula 2-4 when  $R^4$  is  $NHSO_2CH_3$ .

The motivation for using such dye is to produce a printed image with good hue (abstract).

Although there is no explicit disclosure in JP 03231975 of the wavelength of maximum absorption or absorbance at different wavelengths as presently claimed, given that JP 03231975 disclose dye identical to that presently claimed, i.e. dye which has identical chemical structure, it

is clear that the use of the dye disclosed by JP 03231975 in the ink of either Sacripante et al. or Tsutsumi et al. would intrinsically produce an ink composition with wavelength of maximum absorption or absorbance as presently claimed.

In light of the motivation for using specific dye disclosed by JP 03231975 as described above, it therefore would have been obvious to one of ordinary skill in the art to use such dye in the ink jet ink of either Sacripante et al. or Tsutsumi et al. in order to produce an ink which produces a printed image that has excellent color tone, reproducibility, and resistance to light, and thereby arrive at the claimed invention.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Komamura et al. (U.S. 5,612,282) disclose a dye with wavelength of maximum absorbance and absorbance values identical to that presently claimed wherein the dye is almost identical to that presently claimed with the exception that the six-member ring of the dye, i.e. equivalent to the ring with the A substituent as presently claimed, must include nitrogen in the ring which is not required in the present claims. Further, there is no disclosure of water based medium as presently claimed.

Suzuki et al. (U.S. 5,508,421) disclose azomethine dye wherein the first five membered ring, i.e. equivalent to the ring with the R<sup>1</sup> substituent presently claimed, contains only one nitrogen in the ring, while the present claims require two nitrogens in the ring.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Callie E. Shosho  
Examiner  
Art Unit 1714



Callie Shosho  
February 28, 2002